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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/766,698	01/28/2004	Dan G. Wallin	5681-62001	2084

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EXAMINER

BRADLEY, MATTHEW A

ART UNIT

PAPER NUMBER

2187

DATE MAILED: 04/06/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/766,698	WALLIN ET AL.	
	Examiner	Art Unit	
	Matthew Bradley	2187	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 28 January 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-18 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 28 January 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|-----------------------------------------------------------------------------------------|-----------------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims **1-4** and **10-13** are rejected under 35 U.S.C. 102(e) as being anticipated by van de Waerdt (U.S. 2004/0039878) hereinafter referred to as van de Waerdt.

As per independent claims **1** and **10**, van de Waerdt teach,

- a cache receiving a request to access a line of data; (Paragraph 0007 – *specifically taught as data bytes being transferred from the memory subsystem to the cache memory. In order for this to occur, a request to access the data is issued.*)
- determining that a cache miss with respect to the line occurred; and (Paragraph 0007)
- transmitting a bundled transaction on a system interconnect in response to the cache miss, wherein the bundled transaction combines a request for the line of data and a prefetch request (Paragraph 0007).

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- *As per independent claim 10, the Examiner notes that van de Waerdt teaches a multiprocessing computer system as shown in Figure 1c and taught further in paragraph 0032 that performs the method of claim 1.*

As per dependent claims **2** and **11**, van de Waerdt teaches, wherein the request corresponding to the line of data is a read request (Paragraph 0007 as a read taught in paragraph 0042).

As per dependent claims **3** and **12**, van de Waerdt teaches, wherein the prefetch request is a prefetch read request (Paragraph 0007 and Paragraph 0042). *The Examiner notes that if the initial request to access data is done with a read, the prefetch request issued after the miss would be a read as well as data is still requested to be read.*

As per dependent claims **4** and **13**, van de Waerdt teaches, wherein the prefetch read request is a request to a sequential cache line (Paragraph 0034).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims **5-9** and **14-18** are rejected under 35 U.S.C. 103(a) as being unpatentable over van de Waerdt and in view of Hagersten et al (U.S. 5,881,303) hereinafter referred to as Hagersten.

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As per dependent claims **5** and **14**, Van de Waerdt teaches the limitations note supra.

Van de Waerdt does not explicitly teach upgrading a request.

Hagersten teach wherein the request corresponding to the line of data is an upgrade request (Column 17 lines 32-45).

Van de Waerdt and Hagersten are analogous art because they are from the same field of endeavor namely computing systems involving prefetch.

At the time of the invention it would have been obvious to even one of rudimentary skill in the art, having both the teachings of van de Waerdt and Hagersten before him/her, to combine van de Waerdt with Hagersten for the benefit of coherency by upgrading requests to limit the number of stalls in a processing system.

The suggestion for doing so would have been that, "performance of the computer system may be increased due to the decreased stalls experienced by the processors (Column 3 lines 19-21 of Hagersten).

Therefore, it would have been obvious to combine van de Waerdt with Hagersten for the benefit of coherency by upgrading requests to obtain the invention as specified in claims 5-9 and 14-18.

As per dependent claims **6** and **15**, the combination of van de Waerdt and Hagersten teach, wherein the prefetch request is a prefetch upgrade request (Column 17 lines 32-45 of Hagersten). *The Examiner notes that upon exploiting the upgrade functionality of Hagersten into van de Waerdt, the prefetch issued*

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after a cache miss would be a upgrade prefetch request as discussed supra with respect to claims 3 and 12.

As per dependent claims **7** and **16**, the combination of van de Waerdts and Hagersten teaches, wherein the prefetch upgrade request is a request to a sequential cache line (Paragraph 0034 of van de Waerdts).

As per dependent claims **8** and **17**, the combination of van de Waerdts and Hagersten teaches, a second cache transitioning to a first owner state in response to downgrading from a modified state (Column 18 lines 30-39 of Hagersten).

As per dependent claims **9** and **18**, the combination of van de Waerdts and Hagersten teaches, a second cache transitioning to a second owner state from the first owner state in response to a read request (Column 18 lines 30-39 of Hagersten).

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

1. U.S. 6,643,766 Lesartre et al teach speculative pre-fetching in response to a cache miss.
2. U.S. 6,606,688 Koyanagi et al teach a cache control method.
3. U.S. 2003/0115422 Spencer et al teach a system and method for managing data in a cache.


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Matthew Bradley whose telephone number is (571) 272-8575. The examiner can normally be reached on 6:30-3:00 M-F.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Donald A. Sparks can be reached on (571) 272-4201. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

DAS/mb



DONALD SPARKS
SUPERVISORY PATENT EXAMINER